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RUNNING HEAD: TRAUMA-RELATED DISORDERS & SPIRIT POSSESSION

Pathological spirit possession as a cultural interpretation of trauma-related symptoms

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Abstract

Objective: Spirit possession is a phenomenon frequently occurring in war-torn countries. It has been shown to be an idiom of distress entailing dissociative symptoms. However, its association with trauma exposure and trauma-related disorders remains unclear. This study aimed to explore subjective disease models and the relationship between pathological spirit possession and trauma-related disorders in the Eastern DR Congo. **Methods:** Seventy-three (formerly) possessed persons (74% female, mean age: 34 years), referred by traditional and spiritual healers, were interviewed about their experiences of pathological spirit possession, trauma exposure, posttraumatic stress disorder (PTSD) symptoms, depression symptoms, shame and guilt, psychotic symptoms, somatic complaints and the impairment of psycho-social functioning. **Results:** The most common disease model for pathological spirit possession was another person having sent the spirit, mostly a family member or a neighbor, out of jealousy or conflict over resources. Significant correlations were found between spirit possession over lifetime and PTSD symptom severity, feelings of shame and guilt, depressive symptoms, somatic complaints and psychotic symptoms. Spirit possession during the preceding four weeks was associated with PTSD symptom severity, impairment of psycho-social functioning and psychotic symptom severity. **Conclusions:** The results of this study indicate pathological spirit possession to be a broad explanatory framework for various subjectively unexplainable mental and physical health problems, including but not limited to trauma-related disorders. Understanding pathological spirit possession as a subjective disease model for various mental and physical health problems may help researchers and clinicians to develop culturally sensitive treatment approaches for affected individuals.

Keywords*: spirit possession, trauma-related disorders, trance and possessive disorders, dissociation, PTSD, cross-cultural psychology, global mental health*

Background

Armed conflicts are currently present in many parts of the world, causing civilians to suffer immensely from numerous mental health problems and malfunctioning (Schauer & Schauer, 2010). Previous studies have consistently shown that exposure to war and violence enhances the risk of developing trauma-related disorders and mental health problems such as posttraumatic stress disorder (PTSD), depression, substance abuse and impairment of functioning (Ertl, Pfeiffer, Schauer-Kaiser, Elbert, & Neuner, 2014; Pham, Vinck, & Stover, 2009). Furthermore, trauma-related disorders seem to positively correlate with psychotic (Odenwald et al., 2009) and dissociative symptoms (Schalinski, Elbert, & Schauer, 2011). Current research considers dissociation to be an adaptive, functional coping response to extreme stress, traumatic experiences or stressful PTSD symptoms with long-term pathological impact (Schauer & Elbert, 2010). This association has been found in various cultural settings, including Western and non-Western countries (Lewis-Fernández, Martínez-Taboas, Sar, Patel, & Boatin, 2007).

Recent studies in African countries indicate a close relation between exposure to war-related trauma exposure and the occurrence of pathological spirit possession (Igreja et al., 2010; Neuner et al., 2012; van Duijl, Kleijn, & de Jong, 2013). It has been found to be a common phenomenon in countries with a history of war and violence such as Mozambique, Uganda and Ethiopia (de Jong et al., 2001; van Duijl et al., 2013). Spirit possession is generally defined as altered states of consciousness that involve experiences of being under the control of a powerful entity, such as a god, a demon or a devil, with the frequent subjective impression that the person's identity has been replaced by the spirit (Boddy, 1994). However, it is important to note that experiences of spirit possession are not always considered pathological (Neuner et al., 2012). There are forms of spirit possession that are culturally accepted, common and even desired

(Boddy, 1994). Pathological spirit possession seems to occur more frequently among marginal, subordinate and underprivileged people (O'Connell, 1982), constituting a response to internal stress, socioeconomic difficulties and situations with low expectations for aid or support (Ward, 1980). According to findings from Nepal, spirit possession is sometimes considered to cause trauma (Kohrt & Hruschka, 2010), while it may also give rise to stigmatization and hinder recovery from trauma-related disorders (Hecker, Braitmayer, & van Duijl, 2015; Igreja, Dias-Lambranca, Hershey, Calero, & Richters, 2009). Overall, it is a phenomenon often used as an explanation and expression of distress (Neuner et al., 2012; Sar, Alioglu, & Akyüz, 2014), and in many cases it is associated with impaired mental health (Igreja et al., 2010).

Current research on spirit possession often takes the perspective of dissociation theory (Spiegel & Cardeña, 1991; van der Kolk et al., 1996), stating that pathological forms of spirit possession are a common way of describing and experiencing dissociative phenomena (Lewis-Fernández et al., 2007; van Duijl, Kleijn, & de Jong, 2014). In line with this concept, van Duijl and colleagues (2010) found community members with experiences of possession to report significant higher exposure to traumatic events and higher scores on psychoform and somatoform dissociation than the matched, non-possessed community members in a recent case-control study in Uganda. Further research found experiences of pathological spirit possession to be correlated with PTSD symptoms, depression symptoms, and impairment in psycho-social functioning (Ertl et al., 2010; Neuner et al., 2012). Hecker and colleagues (2015) concluded that pathological spirit possession might be seen as a trauma-related disorder, culturally determined through the interpretation of dissociative symptoms related to traumatic exposure. This is in line with the current view on pathological spirit possession of the *International Classification of Diseases*. In the DSM-5, experiences of spirit possession belong to the *Dissociative Identity*

Disorder (DID), a disorder highly correlated with experiences of traumatic life events (Dalenberg et al., 2012). This change in classification was supported by Spiegel et al. (2011), who stress phenomenological similarities between pathological spirit possession and DID. However, there is no universally accepted disease model for spirit possession. Even within a culture, disease models of pathological spirit possession vary; in Uganda, for example, the most common subjective disease models were found to be ritual neglect, neglect of responsibilities, jealousy, the call to become a healer, grief, and land conflicts (van Duijl et al., 2014). Among researchers, traumatic experiences and the cultural interpretation of trauma-related symptoms often serves as an explanation for pathological spirit possession (Hecker et al., 2015).

For the present study, we focused on pathological spirit possession in the eastern part of the Democratic Republic of the Congo (DRC) as research concerning mental health in the DRC is scarce. The DRC has experienced war and severe human rights abuses for more than two decades, resulting in civilians' continuing exposure to massive violence and war-related atrocities (Maedl, 2011) and high prevalence rates for posttraumatic stress disorder (Mels, Derluyn, Broekaert, & Rosseel, 2009) and depression (Pham, Vinck, Kinkodi, & Weinstein, 2010). In previous studies with war-affected individuals, participants often explained their trauma-related symptoms with being possessed by spirits. Yet, it remained unclear what role or function spirit possession played in regard to mental health and well-being. Therefore, we investigated subjective disease models of the patients and hypothesized that very different subjective disease models for spirit possession would be prevalent within the eastern Congolese culture. Furthermore, we investigated the self-reported symptoms of pathological spirit possession and its relation to trauma-related disorders. We hypothesized that pathological spirit possession would be positively correlated with 1) PTSD symptom severity, 2) feelings of shame

and guilt as accompanying symptoms of PTSD, 3) depression symptom severity, 4) impairment in psycho-social functioning, 5) somatic complaints and 6) psychosis symptom severity.

Methods

Participants

Of the 73 participants, 54 (74%) were female. The participants' ages ranged from 18 to 77 years, with a mean age of 33.8 years (*SD* = 12.75). The average years of formal education amounted to 5.8 years (*SD* = 4.98, range: 0-17), with a literacy rate of 59% (*n* = 43). All participants had experienced pathological spirit possession at least once in their lifetime, 19% (*n* = 14) over the course of the preceding four weeks. Exclusion criteria were acute drug or alcohol intoxication.

Procedure

With our local team, we identified and contacted local traditional and spiritual healers in the province of South Kivu, DRC. The traditional healers established contact between us and (former) patients who had experienced spirit possession at some time in their lives. In October 2013, we conducted the interviews at healers' homes or practices or at participants' homes. All instruments were translated into Kiswahili in written form, and the translation was discussed extensively by committee to guarantee precise translation. Interviewers (all clinical psychologists or students on master level) as well as interpreters received extensive training for one week. Prior to the interviews, procedures were explained to the participants in standardized form and informed consent was obtained either through signature or fingerprint. Each interview took approximately 1.5 to 2 hours. Participants received financial compensation of about $5 US. The study was approved by the Ethical Review Board of the University of Konstanz, Germany, and by the Regional Committee for Medical and Health Research Ethics at the St. Olav University Hospital, Trondheim, Norway.

Measures

The first part of the interview consisted of questions on sociodemographic information (e.g., sex, age, ethnicity, educational background).

Pathological spirit possession. Ten in-depth interviews with local spiritual and traditional healers, psychiatrists and psychologists preceded the finalization of a scale for the assessment of pathological spirit possession in the context of the eastern DR Congo. Spiritual healing approaches are rooted in spiritual (e.g., animism) or religious (e.g., Christian) beliefs, whereas traditional healing approaches follow passed down local medical knowledge. However, the boundaries between spiritual and traditional healing are often blurred and the approaches highly overlap. In the interviews conducted, we learned that within the South Kivu Province there are different forms and causes of spirit possession. There are spirits sent by another person through witchcraft, souls of deceased persons (e.g., family members) and wandering spirits randomly choosing their victims. Some spirits possess a person from birth on while others are acquired later in life. A common cause of possession is witchcraft, namely another person sending a spirit out of jealousy. Furthermore, the explanations of having a *"weak mind"* (being fearful or worried) and having done something wrong or culturally unacceptable were brought forward. According to spiritual healers, sinful behavior poses a risk for spirit possession, while traditional healers referred to unresolved family conflict, witchcraft and inheritance more frequently. Overall, our key informants emphasized that sprit possession needs to be interpreted in the light of cultural beliefs that ancestors influence the life of the living. Unresolved conflicts or socially unacceptable behavior may be brought to attention through ancestral spirits. Traditional healers stressed that spirit possession may also be an entrance to healing: the spirits indicate the problems that need to be solved. Symptoms of pathological spirit possession include

hearing voices, visual hallucinations, behavioral changes, involuntary movements, memory loss and sleeping problems, amongst others. In addition to the information from the in-depth interviews, we searched for existing instruments assessing pathological spirit possession in the Great Lakes Region of Central Africa. We used items from the Checklist Dissociative Symptoms for Uganda (van Duijl et al., 2010), the Spirit Possession Questionnaire-Uganda (van Duijl et al., 2013) and the Cen Spirit Possession Scale (Neuner et al., 2012). We finalized the spirit possession questionnaire, entailing open questions on phenomenology and subjective disease models of pathological spirit possession (see Suppl. Table A). We then assessed the subjective reported symptoms with 14 dichotomous questions asking for the symptoms' occurrence during the participant's lifetime (lifetime spirit possession) and during the previous four weeks (current spirit possession). Sum scores (possible range: 0-14) were calculated both for symptoms during lifetime and over the preceding four weeks. In the present study, Cronbach's α coefficient was .65 for lifetime spirit possession symptoms and .50 for current spirit possession symptoms. However, the meaningfulness of Cronbach's α as a measure is limited due to the concepts' heterogeneity.

Trauma exposure. Potentially traumatic and other stressful experiences were measured using an adapted version of the Checklist for Traumatic Events (Ertl et al., 2010) that assesses potentially traumatizing experiences during the entire lifetime. This checklist has proven high reliability (Hecker et al., 2013) and significant concordance with the CIDI event list (Ertl et al., 2010) in earlier studies conducted in the Great Lakes Region. The number of times a specific event had been experienced was not assessed; although this is possible for in depth therapeutic interviews, measuring event types provides an accurate and more practical measure of potentially traumatic experiences (Wilker et al., 2015). For the analysis, a sum score of all event types was

calculated (possible range: 0-39). For example, many of the participants experienced combat situations (67%), natural disasters (54%), torture (15%), or war-related sexual harassment (11%). Particularly women suffered from domestic violence (85%) and sexual violence at home (19%; for details see Suppl. Table B).

PTSD symptom severity. Symptom severity of PTSD in the previous two weeks was assessed by administering the PTSD Symptom Scale-Interview (PSS-I; Foa & Tolin, 2000). This instrument assesses the severity of the 17 PTSD symptoms according to the DSM-IV. Each item was answered on a 4-point scale ranging from 0 (*never/not at all*) to 3 (*five or more times per week/very much*). The PSS-I has proven satisfactory internal consistency, high test-retest reliability, and good concurrent validity (Ertl et al., 2010; Foa, Riggs, Dancu, & Rothbaum, 1993). In the present study, Cronbach's α coefficient was .92. For the analysis, a sum score of all items was calculated (possible range: 0-51). In total, 18% (n = 13) fulfilled the diagnosis of a current PTSD following the DSM-IV criteria for PTSD.

Feelings of shame and guilt. The questionnaire to assess shame and guilt feelings was developed for this study by adapting items from the Trauma-Related Guilt Inventory (Kubany et al., 1996), the HIV and Abuse Related Shame Inventory (Neufeld, Sikkema, Lee, Kochman, & Hansen, 2012) and the Shame Inventory (Rizvi, 2010). Based on participants' answers given in the Checklist for Traumatic Events, participants identified the event they felt most shameful or guilty about. All shame and guilt items were assessed for the preceding four weeks with regard to this event, e.g., *"Have you blamed yourself for what happened?", "Have you thought that what you did is unforgivable?"* (see Suppl. Table C). Participants indicated to which extent they had experienced the specific behavior on a five-point Likert scale ranging from 0 (*not at all/never*) to 4 (*five or more times per week/very much*). For data analysis, a sum score was

computed adding all 12 items (possible range: 0-48). Cronbach's α coefficient was .87 for the present sample.

Depression symptom severity. Through application of the Patient Health Questionnaire-9 (PHQ-9; Kroenke, Spitzer, & Williams, 2001), depressive symptoms over the course of the preceding two weeks were assessed. The PHQ-9 has proven to be a valid and reliable instrument in screening depression in African populations (Adewuya, Ola, & Afolabi, 2006). Answer categories presented to participants ranged from 0 *(not at all*) to 3 (*nearly every day*). A sum score of all nine items was computed (possible range: 0-27). Cronbach's *α* coefficient was .80. In total, four participants (6%) fulfilled the diagnosis of a current Major Depressive Disorder (MDD) following the DSM-IV criteria for MDD.

Impairment of psycho-social functioning. To assess functional impairment in specific daily routines, six items concerning possible deficits in psycho-social areas (e.g. home management, work or leisure activities) were answered on a 5-point Likert scale ranging from 0 (*none*) to 4 (*often cannot do it*). The items were based on the Luo Functioning Scale (LFS; Ertl et al., 2010). The LFS has been used in numerous studies in the Great Lakes Region and has proven high construct validity (Ertl et al., 2010). For the analysis, we computed a sum score of all six items (possible range: 0-24). In the present sample, Cronbach's α coefficient was .71.

Somatic complaints. Somatic complaints were measured through eight dichotomous items on the occurrence of physical symptoms or sickness (e.g. headache, malaria, or stomach pain) during the preceding four weeks. One additional item assessed further somatic complaints and physical symptoms. Up to three symptoms or complaints could be mentioned. For data analysis, a sum score was computed adding all somatic complaint types (possible range: 0-11).

Cronbach's α coefficient for this measure was .56. Due to the item heterogeneity, a higher score was not expected.

Psychotic symptoms. Psychotic symptoms were measured by administering selected and modified items of Section G of the Composite International Diagnostic Interview (CIDI; World Health Organization, 1997). Item selection was based on former research in Somalia (Odenwald et al., 2007). Considering the items used in the aforementioned study and acknowledging the differences in participants' properties (in Somalia, only men were interviewed), 12 items were administered, e.g., *"*Do you believe that someone is plotting against you or trying to hurt you or poison you?*", "*Do you sometimes hear voices that others cannot hear?*"* (see Suppl. Table D). To avoid double ratings for symptoms described as pathological spirit possession symptoms, items G10 ("*Are you convinced that you are under control of some power or force, so that your actions or thoughts are not your own or determined by someone else?*") and G14 ("*Do you feel that strange or magic forces are working on you?*") were not included in the calculation of the sum score. Scores of the 10 remaining dichotomous items were used for computing the sum score (possible range: 0-10). In our sample, Cronbach's α coefficient was .78.

Acute psychotic symptoms were additionally assessed through clinicians' expert ratings and behavioral observation using the Brief Psychiatric Rating Scale (BPRS; Overall & Gorham, 1962), as the validity of self-report measures in acute psychotic patients may be limited (Lincoln, Ziegler, Lüllmann, Müller, & Rief, 2010). The BPRS is a 16-item clinician rating scale providing an external measure of psychopathological symptoms. Following Velligan et al. (2005), we selected the 5 items that loaded strongest on the latent factor psychosis: *grandiosity, suspiciousness, hallucinatory behavior, unusual thought content and bizarre behavior*. Though the item *conceptual disorganization* also loaded on the factor psychosis, it loaded stronger on the

factor activation. Therefore, we did not include it in the present study. After the interview, the interviewer rated current psychopathology on a 7-point scale from 0 (*not present*) to 6 (*extremely severe)* based on the behavior of the patient displayed during the interview. To adjust ratings to the other scales used in this study, we used a 4-point scale from 0 (*not present*) to 3 (*severe*) and computed a sum score of all items. In the present sample, Cronbach's α coefficient was .78.

Data Analysis

Following Caruso and Cliff (1997), we computed Spearman's rho for all correlations as psychological variables are rarely normally distributed. Since we used directed hypotheses, all analyses used a one-tailed $\alpha = .05$. The statistical analysis was carried out with SPSS statistics version 21 for Windows.

Results

Subjective Disease Models of Pathological Spirit Possession

Most of the spirit possessed patients attributed their possession to "*someone sent it*" (41%), "*my own misbehavior*" (18%), and "*bad luck/bad circumstances*" (7%). When reasons were inquired more specifically, 71% of the participants claimed to be possessed because others wanted to harm them, namely a family member (35%; n = 18), a neighbor (23%; n = 12), or an acquaintance (23%; n = 12). Often-mentioned reasons for sending the spirit were jealousy (40%; n = 21) and conflict over resources (10%; n = 5). Other reasons included conflicts concerning marriage, religion, or non-observance of rituals. Fourteen percent of the participants attributed their possession to traumatic or other frightening experiences, while 23% believed their possession to be caused by their "*weak mind*". This was defined as "*having too many thoughts and worries*" (10%) and "*having no faith*" (6%).

Reported Symptoms of Pathological Spirit Possession

Concerning the variety of symptoms reported over lifetime, we found pathological spirit possession to entail a wide range of symptoms (*Table 1)*. Most frequently stated were "*replacement of inner self*" (85%), "*strange dreams*" (79%), "*influenced thoughts*" (76%), "*behavior that was controlled by the spirit*" (74%) and "*loss of memory*" (74%). Ninety-seven percent of the participants described further symptoms of pathological spirit possession that had not been covered in the standardized questionnaire. These could be summarized into the following categories: *fainting/feeling dizzy* (45%), *somatic complaints* (33%), *aggressive behavior* (23%), *anger* (8%), *suicidal ideation* (6%).

Pathological Spirit Possession and Trauma-related Disorders

Symptom severity of lifetime spirit possession correlated significantly positively with PTSD symptom severity, shame and guilt feelings, depression symptom severity, somatic complaints and psychotic symptom severity based on the clinical diagnostic interview (section G of the CIDI; see Table 2). No statistically significant correlations between pathological spirit possession and impairment of psycho-social functioning, psychotic symptoms based on behavioral observation (BPRS) and the number of experienced potentially traumatizing event types were found.

Symptom severity of current spirit possession correlated significantly positively with PTSD symptom severity, current impairment of psycho-social functioning, psychotic symptoms based on clinical-diagnostic interview (CIDI) and based on behavioral observation (BPRS; see Table 2). No statistically significant correlations were found between current spirit possession and depression symptom severity, shame and guilt feelings, and somatic complaints, nor for the number of potentially traumatizing event types.

Discussion

Research concerning pathological spirit possession and its associations with mental and physical health problems and subjective disease models in African countries is scarce, even though it is known that experiences of pathological spirit possession entail psychological distress for persons affected and are associated with impaired mental health (Igreja et al., 2010). Through in-depth interviews with traditional and spiritual healers in the eastern DR Congo, a culturally sensitive, structured scale on symptoms of pathological spirit possession was newly developed. It was subsequently used with 73 (previously) possessed patients to gain a better understanding of symptoms of pathological spirit possession and associated subjective disease models, as well as its correlation with the symptom severity of various mental and physical health disorders.

Various subjective disease models were represented among the interviewees. The most often mentioned one was another person having sent the spirit, followed by attributing the experiences of possession to one's own misbehavior and having bad luck or encountering bad circumstances. In comparison to van Duijl's findings in Uganda (2014), there were differences in the frequency of the various disease models: the belief of another person having sent the spirit was a lot more common in our sample while ritual neglect and neglected responsibilities were much more frequent among her sample. For future research on pathological spirit possession it is important to consider that there may be distinctions between spontaneously reported and queried disease models. Therefore, it may be important to combine qualitative and quantitative data to be able to report the whole spectrum of potential subjective disease models.

Participants of our study reported a broad variety of pathological spirit possession symptoms. In concordance with van Duijl et al.'s findings (2013), making movements that were controlled by the spirit was with 71% among the most common reported symptoms (compared to

65% in van Duijl et al.'s study) while making sounds and movements like an animal was reported rarely in both studies. Hearing voices was reported by 44% of participants in our study; similarly, van Duijl found 40% of possessed patients to report hearing voices during possession. Auditory hallucinations have been shown to be related to adverse childhood experiences (Spiegel et al., 2011) and dissociative identity disorder symptoms (Dorahy et al., 2009), with some authors stating that it is primarily a dissociative feature and not a core symptom of psychosis (Moskowitz & Corstens, 2008). This, in conjunction with the high prevalence of auditory hallucinations as a symptom of pathological spirit possession, provides further support for the concept of pathological spirit possession to be a culturally defined interpretation of dissociative symptoms (Hecker et al., 2015) and the current DSM-5 classification of spirit possession under dissociative identity disorder.

The relatively low Cronbach's alphas (.65 for lifetime and .50 for current pathological spirit possession) in conjunction with the finding that 97% of the participants reported symptoms that were not included in the spirit possession questionnaire may be a sign of the condition's heterogeneity. Furthermore, it implies that the symptoms reported by the traditional and spiritual healers only covered part of the landscape of potential symptoms. Therefore, the current version of our spirit possession questionnaire should be revised for future use. Investigating the discrepancies between the symptoms of pathological possession expected by the informants and those actually reported by the sufferers may be an important step for a deeper understanding of the social role and function of pathological spirit possession.

Consistent with prior research (Ertl et al., 2010; Neuner et al., 2012; van Duijl et al., 2010), results revealed positive correlations of spirit possession symptom severity over lifetime with symptom severity of numerous trauma-related disorders such as PTSD symptom severity,

depression symptom severity, and shame and guilt feelings. Additionally, a positive correlation with psychotic symptom severity was found. However, in contrast to earlier studies (Igreja et al., 2010; Neuner et al., 2012; van Duijl et al., 2010), we did not find a correlation between the number of experienced traumatic event types and pathological spirit possession. One explanation could be that all participants in our sample experienced a high number of different potentially traumatizing event types and all participants of our study have experienced at least one episode of pathological spirit possession during their life, resulting in limited variance and a potential ceiling effect. Thus, our sample cannot be compared to a community sample in which the number of traumatizing experiences and the experiences of spirit possession vary to a greater extent. The positive correlations with PTSD symptom severity and other trauma-related disorders suggest, however, that spirit possession may be a cultural interpretation of subjectively unexplainable trauma-related symptoms. Uncontrollable intrusions (e.g. nightmares, daydreams, flashbacks) can easily be attributed to a spirit or any other external power, but also hyperarousal (*"I am so easily startled, it must be the spirit who controls my movements"*) and avoidance symptoms (*"some spirit prevents me from doing this"*) may be attributed to spirit possession.

Pathological spirit possession during the preceding four weeks was associated with PTSD symptom severity and with the impairment of psycho-social functioning. In contrast to lifetime spirit possession, acute phases of spirit possession may lead to severe suffering and problems in fulfilling everyday life challenges. This may also indicate that traditional and spiritual healers may not cure mental health problems completely but nonetheless help the affected individual to function socially. Pathological spirit possession may thus be regarded as an entrance to healing: the spirits indicate the problems that need to be solved. Traditional reconciliation approaches can support negotiation between afflicted parties to settle conflicts and reconcile. Moreover, current

spirit possession also correlated significantly with psychotic symptom severity based on the clinical-diagnostic interview and behavioral observation. This is in line with prior research revealing pathological spirit possession to function as a local disease model for psychosis and schizophrenia in Uganda and Mali (Abbo, 2011; Napo, Heinz, & Auckenthaler, 2012). Thus, our findings indicate that pathological spirit possession serves as a broad explanatory framework for various subjectively unexplainable physical and mental health problems, including but not limited to trauma-related disorders.

Implications for Future Research and Clinical Practice

The present study adds support to the notion that an enhanced understanding of pathological spirit possession in various cultural contexts is of vital importance in mental health care (van Duijl et al., 2014). Increasing globalization and migration enhance the necessity for cultural sensitivity among clinicians working with patients from diverse cultures (Hecker et al., 2015). Treatment for pathological spirit possession may vary from medication and individual trauma-focused therapy to working with families and communities, collaborating with traditional and spiritual healers, or juridical support and political action (van Duijl, 2014). In some areas, traditional approaches can offer opportunities for negotiation procedures and reconciliation rituals between conflicting parties (Baines, 2007). To offer adequate interventions for patients presenting symptoms of pathological spirit possession, therapists need to be aware of associated mental health problems, cultural disease models and their implications for individual treatment. The cultural and social context of pathological spirit possession needs to receive as much attention as abnormal psychological phenomena (Neuner et al., 2012). Furthermore, therapists and counselors need to expand their focus from mental health problems to the general well-being, psycho-social functioning and subjective disease models of their patients who display

symptoms of trauma-related disorders. More research is needed to understand the associations between pathological spirit possession and trauma-related disorders, psychosis and other mental or physical health problems.

The present study has several limitations that should be noted. Due to the unique context in the eastern DR Congo and the specificity of our sample, its generalizability is restricted. The majority of our sample was female which might be due to women being more prone to spirit possession than men (Seligman, 2005). It may be that pathological spirit possession serves as a way for women to express particularly shameful experiences, i.e. exposure to sexual or domestic violence, as cultural and familial situations may not allow them to express their problems directly. In light of the high rates of domestic physical and sexual violence, spirit possession may also function as an unconscious way to avoid further maltreatment at home. As we used a referral system, the participants' availability, the healers' choices of whom to contact, and their proximity to the interviewing place might have contributed to a selection bias in our study. The cross-sectional nature of the study does not allow us to establish causality, and due to our study design we cannot make a statement concerning the prevalence among civilians living in the eastern DR Congo. An additional limitation involves the absence of other measures of dissociation. We can also not completely rule out that some of the included cases may represent rather non-pathological forms of spirit possession. Furthermore, a potential bias such as the influence of social desirability in subjective reports cannot be ruled out.

Conclusion

In sum, this study contributes to the growing body of literature and the understanding of the phenomenon of pathological spirit possession in non-western societies. In-depth interviews with local traditional and spiritual healers enabled us to gain a deeper understanding of the local

variants of spirit possession. With our findings from interviews with 73 patients, we replicated prior findings from other post-conflict areas (Igreja et al., 2010; Neuner et al., 2012; van Duijl et al., 2014) indicating that pathological spirit possession is related to trauma-related disorders and is associated with a variety of subjective disease models. However, in addition to previous studies classifying spirit possession as a trauma-related disorder, our results suggest it to be a broad explanatory framework for various subjectively unexplainable mental and physical health problems, including but not limited to trauma-related disorders. Understanding pathological spirit possession as a subjective disease model for various mental and physical health problems may help researchers and clinicians to assess underlying cultural and societal concepts carefully, and to develop culturally appropriate treatment approaches for the affected individuals.

Competing interests

The authors declare that they have no competing interests.

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Table 1

Frequency of Spirit Possession Symptoms over Lifetime

Symptom reported	Frequency % (n)
Has an (evil) spirit entered your body and replaced your inner self?	85 (62)
Have you had strange dreams or dreams about the spirit?	80 (58)
Has a spirit influenced your thoughts?	77 (56)
Have you had a lack of memory for parts of the time or the whole time the spirit possessed you?	74 (54)
Have you shown behavior that was not under your control, but controlled by a spirit?	74 (54)
Have you made movements that were not under your control, but controlled by a spirit?	71 (52)
Have you felt paralyzed or were you unable to move or speak when you wanted to?	70 (51)
Have you felt as if someone was holding you tight or something was holding your throat?	64 (47)
Have you seen a spirit or other strange things?	58 (42)
Have you spoken in tongues or in a different voice (which others recognized as the voice of a spirit)?	53 (39)
Have you travelled or moved outside your home or place of work without remembering it (night dancer)?	48 (35)
Have you heard voices of a spirit?	44 (32)
Have you spoken in a language that you normally don't speak?	37 (27)
Have you made sounds or movements as if you had become an animal (e.g., cock, monkey or goat)?	8 (6)

Table 2

Descriptive statistic and inter-correlations

	M	SD	Range	SPL	SPC
1. Spirit possession lifetime (SPL)	8.43	2.67	2-14	1	
2. Spirit possession current (SPC) [a]	6.71	2.30	4-11	.09	1
3. Somatic complaints	4.32	2.26	0-9	.34**	.16
4. Traumatic event types	18.95	6.23	7-32	.11	-.11
5. PTSD symptom severity (PSS-I)	9.08	9.96	0-45	.22*	.24*
6. Depression symptom severity (PHQ-9)	7.25	5.38	0-21	.26*	.13
7. Guilt & shame symptom severity	9.67	8.69	0-31	.23*	.15
8. Impairment of psycho-social functioning	6.30	5.45	0-22	-.06	.24*
9. Psychosis symptom severity (CIDI)	1.92	2.26	0-9	.23*	.40***
10. Psychosis symptom severity (BPRS)	1.99	2.57	0-12	.14	.41***

Note. Correlation coefficient: M = mean, SD = standard deviation, Spearman's rho correlation coefficient: *$p \leq .05$, **$p \leq .01$, *** $p \leq .001$, [a] M, SD, and range refer to n = 14 participants who reported current experiences of spirit possession.